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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/706,813	11/07/2000	Hirohisa Tasaki	1163-0301P	5970

7590 09/30/2004

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EXAMINER	
HAN, QI	
ART UNIT	**PAPER NUMBER**
2654	

DATE MAILED: 09/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/706,813	TASAKI ET AL.	
	Examiner	Art Unit	
	Qi Han	2654	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- *Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.*
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-10,13 and 14* is/are allowed.

6)☒ Claim(s) *11 and 12* is/are rejected.

7)☒ Claim(s) *15* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *4 pto1449 forms*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The references listed in the Information Disclosure Statement submitted on 11/7/2000, 09/13/2002, 11/25/2002 and 06/10/2004 have been considered by the examiner (see attached PTO-1449).

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawing

3. The drawings regarding Fig. 14 and 15 are objected. According to the specification, on page 3, lines 22-25, Fig. 14 and 15 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

4. Claims 11 and 15 are objected to because of the following informalities:

Regarding claims 11 and 15, even though the limitation of "such as the input speech" dose not cause the claim indefinite according to context of the claim, it is not a positive limitation and has any no patent weight. Examiner suggests that applicant either delete the limitation or make an appropriate correction.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over admitted prior art, herein after referenced as admission, in view of Oshikiri et al. (US 6,202,046) herein after referenced Oshikiri.

As per **claim 11**, Admission discloses speech coding apparatus for coding an input speech on a fame-by-frame basis using an adaptive excitation source, which is generated from a past excitation source, and a driving excitation source, which is generated from the input speech

and the adaptive excitation source (specification: the section of "Description of the Prior Art"), comprising:

a perceptual weighting control means for determining a perceptual weighting strength coefficient, (Figs. 17, function block 16 'perceptual weighting filter coefficient calculating unit', wherein the coefficient necessarily reflects strength, such as magnitude, power, or energy);

a driving excitation source coding means for generating excitation source location code indicating information about excitation source locations and information about excitation source polarities based on the repetition period of the adaptive excitation source, the perceptual weighting strength coefficient, and a signal to be coded such as the input speech, the perceptual weighting strength coefficient determined by said perceptual weighting control means, and a signal to be coded such as the input speech, (Figs. 14 and 17-19, function block 5 'driving excitation source cording unit' and function block 16 'perceptual weighting filter coefficient calculating unit', and function blocks 17 and 19 'perceptual weighting filter').

But, Admission does not expressly disclose "determining a perceptual weighting strength coefficient based on a repetition period of the adaptive excitation source". However, this feature is well known in the art as evidenced by Oshikiri who discloses several speech encoding method and apparatus, comprising perceptual weighting synthesis filter (necessarily associates corresponding coefficient(s)) with input of estimated pitch period (repetition period) and adaptive codebook (adaptive excitation source) (Figs. 35 and 44-49), which read on the claimed limitation. Therefore, it would have been obvious to one of ordinary skill in the art at time the invention was made to modify Admission by specifically providing a perceptual weighting a mechanism based on input of estimated pitch period (repetition period) and adaptive codebook,

as taught by Oshikiri, for the purpose of generating a synthesized signal for further minimizing error (Oshikiri: column 28, line 66 to column 29, line 3).

As per **claim 12** (depending on claim 11), Oshikiri further discloses the average of the pitch Tr obtained in the advance reading portion and the pitch period T(-1) of the previous frame is calculated and the average is compared with the pitch period T(0) of the current frame using equation 28, which means that the system is capable of implementing the functionality as the claimed "determining the perceptual weighting strength coefficient based on an average of the repetition period of the current adaptive excitation source and repetition periods of previously-generated adaptive excitation sources". Therefore, it would have been obvious to one of ordinary skill in the art at time the invention was made to modify Admission by specifically providing calculating a average based on the pitch periods of previous frame and current frame, as taught by Oshikiri, for the purpose of using an estimated pitch period for generating a synthesized signal for further minimizing error (Oshikiri: column 28, line 66 to column 29, line 3).

Allowable Subject Matter

6. Claims 1-10 and 13-14 are allowed, and claim 15 would be allowable if applicant overcomes the claim objection (see above).

The following is an examiner's statement of reasons for allowance:

Regarding independent **claims 1 and 6**, the instant application is directed to a speech coding/decoding apparatus. Each independent claim combines certain well-known features in the art and identifies the uniquely distinct features of having a repetition period pre-selecting

means for generating/providing a plurality of candidates for a repetition period of the driving excitation source by multiplying a repetition period of the adaptive excitation source by a plurality of constant numbers, respectively, and for pre-selecting a predetermined number of candidates from all the candidates generated and furnishing the predetermined number of pre-selected candidates.

Regarding **claims 2-5** (depending on claim 1) **and 7-10** (depending on claim 6), the allowance is based on the same reason as described for claims 1 and 6, because the dependent claims inherit all limitations from their parent claim(s).

Regarding independent **claims 13 and 14**, the instant application is directed to a speech coding/decoding apparatus. Each independent identifies the uniquely distinct features of comprising an excitation source location table including a plurality of selectable possible locations and a fixed magnitude determined based on the number of the plurality of possible locations for each of the plurality of excitation sources;

a driving excitation source coding/decoding means for placing the plurality of excitation sources at respective possible locations while multiplying each of the plurality of excitation sources by a corresponding fixed magnitude, with reference to said excitation source location table, for generating a driving excitation source by calculating a sum of the plurality of excitation sources each of which has been multiplied by the corresponding fixed magnitude and is thus placed at one corresponding possible location, for each of all combinations of possible locations of the plurality of excitation sources, and for selecting possible locations and polarities of the plurality of excitation sources which provide a driving excitation source having a smallest coding distortion between itself and the input speech so as to generate excitation source location code

and polarity code (for claim 13); or a driving excitation source coding means for placing the plurality of excitation sources at respective possible locations while multiplying each of the plurality of excitation sources by a corresponding fixed magnitude, with reference to said excitation source location table, for generating a driving excitation source by calculating a sum of the plurality of excitation sources each of which has been multiplied by the corresponding fixed magnitude and is thus placed at one corresponding possible location, for each of all combinations of possible locations of the plurality of excitation sources, and for selecting possible locations and polarities of the plurality of excitation sources which provide a driving excitation source having a smallest coding distortion between itself and the input speech so as to generate excitation source location code and polarity code (for claim 14).

Regarding independent **claims 15**, the instant application is directed to a speech coding apparatus. The independent claim identifies the uniquely distinct features of comprising:

a pre-table calculating means for calculating a correlation between a signal to be coded and each of a plurality of synthesized speeches each of which is generated based on a corresponding temporary driving excitation source that is a signal obtained by placing a predetermined excitation source at a corresponding one of all possible locations, and a cross-correlation between any two of the plurality of synthesized speeches, and for storing these calculated correlations and cross-correlations as a pre-table therein;

a pre-table modifying means for calculating a correlation between the signal to be coded and a synthesized speech generated based on the adaptive excitation source, and a correlation between each of the plurality of synthesized speeches generated based on the corresponding

temporary driving excitation source and the synthesized speech generated based on the adaptive excitation source, and for modifying said pre-table using these calculated correlations; and

a searching means for determining the locations and polarities of the plurality of excitation sources using the pre-table corrected by said pre-table modifying means so as to generate excitation source location code indicating the locations of the plurality of excitation sources and excitation source polarity code indicating the polarities of the plurality of excitation sources.

7. The closest prior art of record, Oshikiri et al. (US 6,202,046), Kroon et al. (US 5,732, 389), Gao (US 6,507,814 B1),Taumi et al. (US 5,787,389), Chen (US 5745871), Yasumaga (US 6,453,288 B1), provided numerous teachings and/or alternative techniques for speech coding, including variety of CELP (code excited linear prediction) coding, using adaptive and fixed excitation codebook, estimating and searching pitch lag (period) by using correlation function or matrix, selecting pitch lag from multiple candidates, and adapting perceptual filtering feature. However, the features stated above, are not anticipated by, nor made obvious by the prior art of the record.

8. As allowable subject matter has been indicated, applicant's reply must either comply with all formal requirements or specifically traverse each requirement not complied with. See 37 CFR 1.111(b) and MPEP § 707.07(a).

9. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

10. Any response to this action should be mailed to:
Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450
or faxed to:
(703) 872-9306, (for formal communications intended for entry)
Or:
(703) 872-9306, (for informal or draft communications, and please label "PROPOSED" or "DRAFT")

Patent Correspondence delivered by hand or delivery services, other than the USPS, should be addressed as follows and brought to U.S. Patent and Trademark Office, 220 20th Street S., Customer Window, Crystal Plaza Two, Lobby, Room 1B03, Arlington, VA, 22202

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Qi Han whose telephone numbers is (703) 305-5631. The examiner can normally be reached on Monday through Thursday from 9:00 a.m. to 7:00 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil, can be reached on (703) 305-6954.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Inquiries regarding the status of submissions relating to an application or questions on the Private PAIR system should be directed to the Electronic Business Center (EBC) at 866-217-9197 (toll-free) or 703-305-3028 between the hours of 6 a.m. and midnight Monday through Friday EST, or by e-mail at: ebc@uspto.gov. For general information about the PAIR system, see http://pair-direct.uspto.gov.

QH/qh
September 23, 2004

Donald L. Storm
PATENT EXAMINER
AU 2654